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ATTACHMENT B

REMARKS

By the present amendment, Claim 1 has been amended in a manner so as to direct the application to the specific antibody that binds to the M31 subregion, and it is clear that this claim satisfies the written description requirements as reflected in the training materials for the Written Description Guidelines of the United States Patent and Trademark Office (USPTO), as discussed further below. In addition, other minor changes have been made to the dependent claims either to incorporate suggestions of the Examiner or to otherwise place the claims in proper form. Finally, in light of the changes made to claim 1 to direct the claim to the specific antibody, Claims 9-16 have been canceled without prejudice as moot. Applicants submit that for reasons as set forth in greater detail below, the present amendments place this case in condition for allowance.

In the Official Action, the Examiner rejected the claims on the basis of the Written Description Requirement citing MPEP 2163.02, *Vas-Cath v. Mahurkar,* and the Guidelines for Examination of Patent Applications with regard to the 112 Written Description Requirement. However, the Examiner failed to cite to the Written Description Guidelines Training Materials which have been brought to the attention of the Examiner previously during the prosecution of this application. Once again, excerpts from the Training Materials are attached hereto for the benefit of the Examiner.

In short, the training materials cover this specific issue, namely the claim directed to an antibody to a particular antigen, which is the case in the present application wherein Applicants claim an antibody that binds to the antigen known as the M31 subregion of the collagen binding protein of *Staphylococcus aureus.* In the Training

Materials, currently available on the website for the United States Patent and Trademark Office (ww.uspto.gov), the specific case for the satisfaction of the written description requirements for Antibodies is presented. In the case as presented, the application discloses that "antigen X has been isolated," providing the clear protocol for doing so, and "the specification contemplates but does not teach in an example antibodies which specifically bind to antigen X" The claim in question is directed to an antibody that is capable of binding the antigen X.

In such a case, the USPTO holds that "the disclosure **meets the requirement under 35 USC 112 first paragraph as providing an adequate written description of the claimed invention."** (See attached Exhibit 1, Excerpt for "Antibodies" from Written Description Guidelines training Materials). As noted by the USPTO Training Materials, "the general knowledge in the art is such that antibodies are structurally well characterized", and that "considering the routine art-recognized method of making antibodies to fully-characterized antigens, the well defined structural characteristics for the five classes of antibody, the functional characteristics of antibody binding, and the fact that antibody binding is well developed and mature, **one of skill in the art would have recognized that the spectrum of antibodies which bind to antigen X were implicitly disclosed as a result of the isolation of antigen X."** (Emphasis added).

In the present case, Applicants' specification goes **beyond** the mere characterization and isolation of the specific antigen, namely the M31 subregion at amino acids 61-343 of the collagen binding protein, but indeed Applicants' specification actually describes generating antibodies to the M31 region (see original specification, e.g., at page 106). Accordingly, Applicants' specification provides **more** than an isolation of the antigen targeted by the claimed antibody, which would in and of itself

have been sufficient to have satisfied the Written Description requirement under Section 112, and indeed Applicants specification describes in examples the actually generation of antibodies from the M31 subregion. Accordingly, Applicants specification actually **exceeds** what would be required to meet the written description requirement, as reflected in the Written Description Training Materials attached hereto, and the Examiner's rejection on the basis of the written description requirement is respectfully traversed and should be withdrawn.

In the Official Action, the Examiner rejected the claims on the grounds of enablement, but these remarks are directed entirely to aspects of the claims relating to the treatment or prevention of staphylococcal infections. Without addressing the merits of the Examiner's arguments, this rejection has become moot in light of the present amendments directed the claims to the specific antibodies that bind to the M31 subregion. As indicated above, these antibodies have been disclosed in Applicants' specification and have been shown to be useful by virtue of the fact that the use of these antibodies improved the survival of treated mice (see, e.g., specification at page 106). Accordingly, the claims in their present form overcome this rejection, and the rejection should be withdrawn as moot.

In the Official Action, the Examiner had two minor objections to the claim language, the first dealing with the term "specific" before the M31 subregion and with regard to the term "suitable" which arises only with regard to Claim 3. Without addressing the merits of the Examiner's arguments, and indeed it is unclear why the Examiner would reject all of the claims on the basis of a term arising in only one dependent claim, these objections are overcome in the amended set of claims provided herewith.

Finally, in the Official Action, the Examiner rejected the claims on the basis of the Patti et al. 1995 *Journal of Biological Chemistry* article which discloses antibodies to a different subregion of the collagen binding protein, namely the region at amino acids 151-297 (also known as M17). In the rejection, the Examiner asserted that this reference "teach[es] that the antibodies were raised against the M31 binding segments" when in fact, as shown below, this is clearly not the case. Accordingly, for reasons as set forth below, this rejection, insofar as applied to the claims as amended, is respectfully traversed and should be withdrawn.

As reflected above, and in the attached Declaration of Dr. Joseph M. Patti, Ph.D., one of the inventors of the present application and the first named author of the cited 1995 reference, contrary to the Examiner's assertions, the 1995 Patti et al. reference does **not** teach an antibody that can bind to the M31 subregion at amino acids 61-343 of the collagen binding protein of *S. aureus.* In particular, the present invention is now directed to antibody that binds to the M31 subregion of the collagen binding protein of *S. aureus,* this subregion having the sequence of amino acids 61 to 343 of the collagen binding protein. This subregion is a different subregion than the one isolated as disclosed in the 1995 Patti et al. paper cited by the Examiner. As indicated in the attached Declaration, that reference discloses isolation of the M17 subregion (amino acids 151-297) and **not** any antibodies generated against the 61-343 subregion known as M31. Accordingly, the Examiner's statement that this article somehow teaches "that antibodies were raised against the M31 collagen binding segments" (Official Action, page 11) is incorrect. Moreover, to the extent that the Examiner based that statement on the belief that antibodies raised against a lesser-included region (e.g., 151-297) would necessarily recognize or bind to a greater region (e.g., 61-343), this is also not true.

To the contrary, as reflected in the attached Declaration of Dr. Patti, tests were conducted with regard to various subregions, and these tests showed no predictability with regard to which subregions could be recognized by other subregions regardless of whether they were lesser included regions or larger regions. In the tests as reflected in the Appendix to Dr. Patti's Declaration, antibodies which were generated against and which recognized at least the M55 (50-329) region did **not** all recognize the native collagen receptor even though the native collagen receptor protein would have included the lesser M55 region which is the collagen binding domain of the collagen binding protein. In addition, a number of these antibodies did **not** recognize the M31 region. Even further, additional tests showed that **none** of the generated antibodies recognized the M17 subregion indicating that whatever epitopes are present on the isolated M17 region were not recognized by antibodies generated against a larger region.

Thus, contrary to the Examiner's assumptions, the Declaration and evidence submitted herewith shows that antibodies generated against one particular subregion of the collagen binding protein do not necessarily recognize larger regions or lesser included regions, and thus the Examiner's assumption that the cited 1995 Patti et al. reference taught antibodies that bind to the M31 subregion is not true. As reflected herein, there was no disclosure or suggestion in the 1995 Patti et al. paper of any antibodies which were generated against or which could bind to the M31 subregion (amino acids 31-343), and thus this reference clearly does not anticipate or make obvious the present claims.

Accordingly, the Examiner's rejection of the claims on the basis of the 1995 Patti et al. reference, insofar as applied to the claims as amended, is respectfully traversed and should be withdrawn.

In light of the amendments and arguments as set forth above, and the attachments hereto, Applicants respectfully submit the present application has been placed in condition for allowance, and such action is earnestly solicited.

END OF REMARKS

EXHIBIT 1

SYNOPSIS OF APPLICATION OF WRITTEN DESCRIPTION GUIDELINES

Contents

Example 16: Antibodies

Specification: The specification teaches that antigen X has been isolated and is useful for detection of HIV infections. The specification teaches antigen X as purified by gel filtration and provides characterization of the antigen as having a molecular weight of 55 KD. The specification also provides a clear protocol by which antigen X was isolated. The specification contemplates but does not teach in an example antibodies which specifically bind to antigen X and asserts that these antibodies can be used in immunoassays to detect HIV. The general knowledge in the art is such that antibodies are structurally well characterized. It is well known that all mammals produce antibodies and they exist in five isotypes, IgM, IgG, IgD, IgA and IgE. Antibodies contain an effector portion which is the constant region and a variable region that contains the antigen binding sites in the form of complementarity determining regions and the framework regions. The sequences of constant regions as well as the variable regions subgroups (framework regions) from a variety of species are known and published in the art. It is also well known that antibodies can be made against virtually any protein.

Claim: An isolated antibody capable of binding to antigen X.

Analysis:

A review of the full content of the specification indicates that antibodies which bind to antigen X are essential to the operation of the claimed invention. The level of skill and knowledge in the art of antibodies at the time of filing was such that production of antibodies against a well-

characterized antigen was conventional. This is a mature technology where the level of skill is high and advanced.

The claim is directed to any antibody which is capable of binding to antigen X.

A search of the prior art indicates that antigen X is novel and unobvious.

Considering the routine art-recognized method of making antibodies to fully characterized antigens, the well defined structural characteristics for the five classes of antibody, the functional characteristics of antibody binding, and the fact that the antibody technology is well developed and mature, one of skill in the art would have recognized that the spectrum of antibodies which bind to antigen X were implicitly disclosed as a result of the isolation of antigen X.

Conclusion: The disclosure meets the requirement under 35 USC 112 first paragraph as providing an adequate written description of the claimed invention.